

**AQUATICS TEST 2005 (REGIONAL)**

**TEAM** \_\_\_\_\_

**1. Water Quality - Field Tests** Fill in the answers in the appropriate spaces.

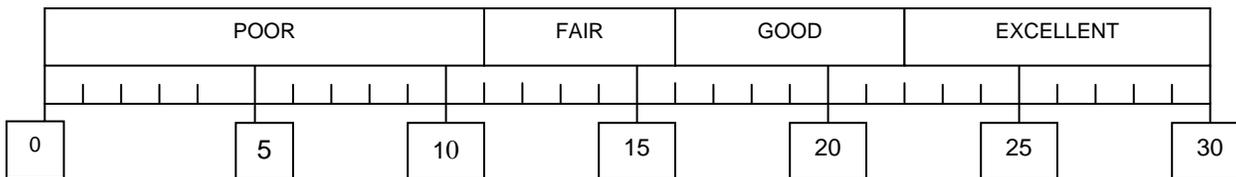
Temperature _____ C Dissolved Oxygen _____ pH _____ <b>(3 points each =9 points total)</b>	<b>Water Odors (2 point)</b> <input type="checkbox"/> Normal/None <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Fishy <input type="checkbox"/> Other _____ <b>Canopy Cover (2 point)</b> <input type="checkbox"/> Partly open <input type="checkbox"/> Partly shaded <input type="checkbox"/> Shaded <b>Turbidity (if not measured) (2 point)</b> <input type="checkbox"/> Clear <input type="checkbox"/> Slightly turbid <input type="checkbox"/> Turbid <input type="checkbox"/> Opaque <input type="checkbox"/> Stained <input type="checkbox"/> Other _____
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**2. Macroinvertebrate identification and tally. (Total of 30 points)** Identify the samples (**2 points each**) by placing the number of the appropriate sample next to the name given in the table below. Add and multiply as indicated (**1 point each**) and provide the Cumulative Index Value (**1 point**). Circle the appropriate area on the scale (**1 point**).

GROUP 1 TAXA	Code	GROUP 2 TAXA	Code	GROUP 3 TAXA	Code
Water penny larvae		Damselfly nymphs		Blackfly larvae	
Mayfly nymphs		Dragonfly nymphs		Aquatic worms	
Stonefly nymphs		Cranefly larvae		Midge larvae	
Dobsonfly larvae		Beetle larvae		Pouch snails	
Caddisfly larvae		Crayfish		Leeches	
Riffle Beetle adults		Scuds			
Other snails		Clams			
		Sow Bugs/Isopods			
Number of taxa present		Number of taxa present		Number of taxa present	
Times index value of 3		Times index value of 2		Times index value of 1	

**CUMULATIVE INDEX VALUE =** \_\_\_\_\_ **(2 points)**

**BIOLOGICAL QUALITY ASSESSMENT SCALE** **(2 points)**



3. Match the following effects with the causes: (1 point each = total of 6 points)

- |       |                     |   |
|-------|---------------------|---|
| _____ | sedimentation       | a. pesticide runoff                             |
| _____ | toxicity            | b. clearcutting to edge of stream               |
| _____ | fish kill           | c. road construction                            |
| _____ | nutrient enrichment | d. oxygen depletion                             |
| _____ | streambank erosion  | e. lawn fertilization                           |
| _____ | embeddedness        | f. build-up of sediment around bottom structure |

4. \_\_\_\_\_ Bacteriological data would be of particular interest for assessing which of the following pollutant sources? (1 point):

- a. acid mine drainage
- b. runoff from logging or construction operations
- c. animal waste runoff from farms
- d. hazardous waste from landfills
- e. discharges from a chemical plant/factory

5. \_\_\_\_\_ Which of the following groups of organisms is most tolerant of poor water quality? (1 point)

- a. stoneflies, mayflies, caddisflies.
- b. aquatic worms, scuds, pouch snails.
- c. clams, black fly larvae, dragonflies.
- d. all of the above.

6. \_\_\_\_\_ Hardness is the measure of what? (1 point)

- a. Calcium ions dissolved in water
- b. Magnesium ions dissolved in water
- c. Both a and b
- d. Neither a or b

7. Label the following as neutral, acidic or basic pH: (3 points)

\_\_\_\_\_ 4.0

\_\_\_\_\_ 7.0

\_\_\_\_\_ 10.0

8. \_\_\_\_\_ True or False: Halophytes are plants that have adapted to wetland areas. (1 point)
9. \_\_\_\_\_ What differentiates an upland from a wetland? (1 point)
- vegetation
  - soil color
  - water
  - all of the above
10. List five ways to conserve water (1 point each = total 5 points)
11. \_\_\_\_\_ Streams that dry up during periods of low rainfall are called: (1 point)
- impermeable
  - clinograde
  - intermittent
  - perennial
12. \_\_\_\_\_ Constructed wetlands can be used for: (1 point)
- skiing
  - surfing
  - cleaning up waste water
  - scuba diving
13. \_\_\_\_\_ There are a number of Canada Geese around a pond. What, if any, relationship between geese and DO in a pond would you expect? (1 point)
- increased number of geese, increased DO
  - increased number of geese, decreased DO
  - reduced number of geese, decreased DO
  - geese obtain their oxygen from the air, not water, so there would be no relationship
14. What is a watershed? (5 points)
15. \_\_\_\_\_ In which of these situations would you expect to have the highest level of Dissolved Oxygen? (1 point)
- Drainage ditch
  - Wetland
  - Mountain stream
  - Large lake

16. \_\_\_\_\_ A town built in a particular watershed in the early 1800s includes highways, homes, athletic fields, woodland, parking lots, buildings and pasture. Any pollutants in the stream would originate mostly from which of the following: (1 point)
- point sources
  - nonpoint sources
  - air borne sources
  - strip mines
17. \_\_\_\_\_ Chemical fertilizer runoff from the pasture might increase which of the following problems in this stream: (1 point)
- acidity
  - algal growth
  - coliform counts
  - heavy metal pollution
18. \_\_\_\_\_ Which of the following tests would be used to indicate if pathogenic microorganisms might be present in this stream: (1 point)
- BOD
  - coliform count
  - pH
  - water hardness
19. \_\_\_\_\_ The forest land that originally existed in this watershed was cleared for building and for agriculture. What possible effect(s), if any, might there be on the stream: (1 point)
- decreased sedimentation and decreased photosynthesis
  - decreased sedimentation and increased photosynthesis
  - increased sedimentation and decreased photosynthesis
  - increased sedimentation and increased photosynthesis
  - no effects
20. \_\_\_\_\_ True or false: Lakes in Kentucky are often man-made reservoirs instead of natural lakes. (1 point)
21. \_\_\_\_\_ Release of cold, oxygen-deprived water from the bottom of a reservoir is what kind of release? (1 point)
- epilimnionic
  - metalimnionic
  - hypolimnionic
  - thermolimnionic
22. \_\_\_\_\_ On a habitat assessment, stream bank covered less than 50 percent by vegetation would be: (1 point)
- optimal
  - suboptimal
  - marginal
  - poor

23. \_\_\_\_\_ When performing a habitat assessment of a stream, which velocity depth regime would a riffle be (1 point)

- a. deep slow
- b. deep fast
- c. shallow slow
- d. shallow fast

24. \_\_\_\_\_ Which is larger, pebble or cobble? (1 point)

25. When performing a sweep sample, name three non-riffle habitats you might sample: (3 points)

26. \_\_\_\_\_ “Cold water aquatic habitat” is defined as a stream that will support indigenous aquatic life or populations of what fish? (1 point)

- a. trout
- b. sculpins
- c. salmon
- d. bluegill

27. \_\_\_\_\_ Many places along the Cumberland River are free of dams and only accessible by foot trails. Which use designation do you think it has? (1 point)

- a. cold water aquatic habitat
- b. federal wild river areas
- c. outstanding national resource water
- d. federal scenic river areas

28. Match the following terms with their correct definitions (1 point each)

\_\_\_\_\_transpiration

a. the transformation of water from a liquid into a gas

\_\_\_\_\_precipitation

b. the seeping into the ground of water

\_\_\_\_\_infiltration

c. the transfer of water from the atmosphere to land

\_\_\_\_\_aquifer

d. the process of water vapor in the air turning into liquid water

\_\_\_\_\_surface runoff

e. water-bearing rock that readily transmits water to wells and springs

\_\_\_\_\_evaporation

f. excess rainfall that cannot infiltrate the ground

\_\_\_\_\_condensation

g. transfer of water to the atmosphere by plants and vegetation

29. \_\_\_\_\_ Karst regions are found in areas with what kind of geology? (1 point)

- a. sandstone
- b. limestone
- c. slate
- d. pumice

30. \_\_\_\_\_ Which of the following would increase bank stability? (1 point)

- a. plant riparian vegetation
- b. increase agriculture
- c. channelization
- d. all of the above

31. Name 2 benefits of riparian areas along the stream. (2 points)

32. Define the term wetland. (2 points)